

CLAIM AMENDMENTS

1. (Currently Amended) A method for manufacturing a semiconductor device comprising ~~the steps of:~~

forming a first insulating film on a substrate;

forming a second insulating film on the first insulating film; and

forming a gate electrode on the second insulating film₁, wherein

~~the step of forming a second insulating film comprises~~

~~a first step of supplying film-forming materials and making~~ adsorbing
the film-forming materials ~~adsorbed~~ on the first insulating film;

~~a second step of purging the film-forming materials that has~~ have not
been adsorbed;

~~a third step of supplying oxidants to oxidize the adsorbed film-forming~~
materials; and

~~a fourth step of purging the oxidants that has~~ have not contributed to
oxidization;

~~the step of forming a~~ the second insulating film is repeated repeatedly, for a
plurality of cycles, continuously; and

~~the purging the oxidants for a purging time in the fourth step in the an initial~~
~~predetermined number of the plurality cycles that is made~~ longer than the purging time of
oxidants in the fourth step in following cycles after the initial number of cycles.

2. (Currently Amended) The method for manufacturing a semiconductor device according to claim 1, wherein the purging time of the oxidants in the fourth step in initial
~~predetermined number of cycles~~ is 5 to 15 times longer than the purging time of the oxidants
~~in the fourth step in following cycles after the initial number of cycles.~~

3. (Currently Amended) The method for manufacturing a semiconductor device according to claim 1, wherein ~~either~~ the second insulating film is selected from the group consisting of HfO₂, HfAlO_x, HfSiO_x, or a nitride and nitrides thereof is used as the second insulating film.

4. (Currently Amended) The method for manufacturing a semiconductor device according to claim 1, wherein the initial ~~predetermined~~ number of cycles is 10 to 20 cycles.

5. (Currently Amended) A method for manufacturing a semiconductor device comprising ~~the steps of:~~

forming a first insulating film on a substrate;

forming a second insulating film on the first insulating film; and

forming a gate electrode on the second insulating film₁, wherein

~~the step of forming a second insulating film comprises~~

~~a first step of supplying film-forming materials and making~~ adsorbing
the film-forming materials ~~adsorbed~~ on the first insulating film;

~~a second step of purging the film-forming materials that has~~ have not
been adsorbed;

~~a third step of supplying oxidants to oxidize the adsorbed film-forming~~
materials; and

~~a fourth step of purging the oxidants that has~~ have not contributed to
oxidization;

~~the step of forming a~~ the second insulating film is repeated repeatedly, for a
plurality of cycles, continuously; and

~~the purging the film-forming materials for a purging time in the second step in~~
~~the an initial predetermined number of the plurality cycles that is made~~ longer than the
purging time of the film-forming materials in the second step in following cycles after the
initial number of cycles.

6. (Currently Amended) The method for manufacturing a semiconductor device according to claim 5, wherein the purging time of the film-forming materials in the second
~~step in initial predetermined number of cycles~~ is 5 to 10 times longer than the purging time of
the film-forming materials in the second step in following cycles after the initial number of
cycles.

7. (Currently Amended) The method for manufacturing a semiconductor device according to claim 5, wherein ~~either~~ the second insulating film is selected from the group
consisting of HfO₂, HfAlO_x, HfSiO_x, or a nitride and nitrides thereof is used as the second
insulating film.

8. (Currently Amended) The method for manufacturing a semiconductor device according to claim 5, wherein the initial ~~predetermined~~ number of cycles is 5 to 20 cycles.

9. (Currently Amended) A method for manufacturing a semiconductor device comprising ~~the steps of:~~

forming a first insulating film on a substrate;

forming a second insulating film on the first insulating film; and

forming a gate electrode on the second insulating film, wherein

~~the step of forming a second insulating film comprises~~

~~a first step of supplying film-forming materials and making adsorbing~~
the film-forming materials ~~adsorbed~~ on the first insulating film;

~~a second step of purging the film-forming materials that has have not~~
been adsorbed;

~~a third step of supplying oxidants to oxidize the adsorbed film-forming~~
materials; and

~~a fourth step of purging the oxidants that has have not contributed to~~
oxidization;

~~the step of forming a~~ the second insulating film ~~is repeated repeatedly,~~ for a plurality of cycles, continuously;

~~the purging film-forming material for a purging time in the second step in the~~
initial ~~predetermined~~ number of the plurality cycles ~~that is made~~ longer than the purging time
in the ~~second step in following~~ cycles after the initial number of cycles for film-forming
materials; and

~~the purging the film-forming materials for a purging time in the second step in~~
the an initial-predetermined number of the plurality cycles ~~that is made~~ longer than the
purging time the film-forming materials in the second step in following cycles after the initial
number of cycles.

10. (Currently Amended) The method for manufacturing a semiconductor device according to claim 9, wherein

the purging time of the oxidants in the ~~fourth step in~~ initial ~~predetermined~~ number of cycles is 5 to 15 times longer than the purging time of the oxidants in the ~~fourth step in following~~ cycles after the initial number of cycles; and

the purging time of the film-forming materials in the ~~second step in~~ initial ~~predetermined~~ number of cycles is 5 to 10 times longer than the purging time of the film-forming materials in the ~~second step in following~~ cycles after the initial number of cycles.

11. (Currently Amended) The method for manufacturing a semiconductor device according to claim 9, wherein ~~either the second insulating film is selected from the group consisting of HfO₂, HfAlO_x, HfSiO_x, or a nitride and nitrides thereof is used as the second insulating film.~~

12. (Currently Amended) The method for manufacturing a semiconductor device according to claim 9, wherein the initial ~~predetermined~~ number of cycles is 10 to 20 cycles.

13. (Currently Amended) A method for manufacturing a semiconductor device comprising ~~the steps of:~~

forming a first insulating film on a substrate;

forming a second insulating film on the first insulating film; and

forming a gate electrode on the second insulating film₂, wherein

~~the step of forming a second insulating film comprises~~

~~a first step of supplying film-forming materials and making adsorbing~~
the film-forming materials ~~adsorbed~~ on the first insulating film;

~~a second step of purging the film-forming materials that has have not~~
been adsorbed;

~~a third step of supplying oxidants to oxidize the adsorbed film-forming~~
materials; and

~~a fourth step of purging the oxidants that has have not contributed to~~
oxidization;

~~the step of forming a~~ the second insulating film ~~is repeated repeatedly,~~ for a plurality of cycles, continuously; and

~~the supply supplying a larger quantity of the oxidants in the third step in the an~~
initial ~~predetermined~~ number of the plurality of cycles ~~is made more than the supply quantity~~
~~of the oxidants in the third step than in following the cycles after the initial number of cycles.~~

14. (Currently Amended) The method for manufacturing a semiconductor device according to claim 13, wherein the ~~supply~~ quantity of the oxidants ~~in the third step~~ supplied in the initial ~~predetermined~~ number of cycles ~~is made 2 to 3 times more larger~~ than the ~~supply~~ quantity of the oxidants ~~in the third step~~ supplied ~~in following the cycles after the initial~~ number of cycles.

15. (Currently Amended) The method for manufacturing a semiconductor device according to claim 13, wherein ~~either the second insulating film is selected from the group consisting of HfO₂, HfAlO_x, HfSiO_x, or a nitride and nitrides thereof is used as the second insulating film.~~

16. (Currently Amended) The method for manufacturing a semiconductor device according to claim 13, wherein the initial ~~predetermined~~ number of cycles is 5 to 20 cycles.

17. (Currently Amended) A method for manufacturing a semiconductor device comprising ~~the steps of:~~

forming a first insulating film on a substrate;

forming a second insulating film on the first insulating film; and

forming a gate electrode on the second insulating film, wherein

~~the step of forming a second insulating film comprises~~

~~a first step of supplying film-forming materials and making~~ adsorbing
the film-forming materials ~~adsorbed~~ on the first insulating film;

~~a second step of purging the film-forming materials that has~~ have not
been adsorbed;

~~a third step of supplying oxidants to oxidize the adsorbed film-forming~~
materials; and

~~a fourth step of purging the oxidants that has~~ have not contributed to
oxidization;

~~the step of forming a~~ the second insulating film is repeated for a plurality of
cycles continuously;

~~the supply of supplying the oxidants in the third step is separated to a plurality~~
of separated times; and

~~the number of times for supplying the oxidants in the third step in the an initial~~
~~predetermined number of the plurality of cycles is made more than the a number of the~~
separated times larger in number than the number of separated times for supplying of
supplying the oxidants in the third step in following cycles following the initial number of
cycles.

18. (Currently Amended) The method for manufacturing a semiconductor device according to claim 17, wherein the number of the separated times for ~~of~~ supplying the
oxidants ~~in the third step~~ in the initial ~~predetermined~~ number of cycles is ~~made~~ 2 to 3 times

In re Appln. of KAWAHARA et al.
Application No. Unassigned

~~more larger~~ than the number of the separated times for of supplying the oxidants in the ~~third~~
~~step in following~~ cycles following the initial number of cycles.

19. (Currently Amended) The method for manufacturing a semiconductor device according to claim 17, wherein ~~either~~ the second insulating film is selected from the group consisting of HfO₂, HfAlO_x, HfSiO_x, or a nitride and nitrides thereof is used as the second insulating film.

20. (Currently Amended) The method for manufacturing a semiconductor device according to claim 17, wherein the initial ~~predetermined~~ number of cycles is 5 to 20 cycles.